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Digital Ethics Governance in Educational Communication: A Systematic Review of Data Privacy and Generative AI in Algorithmic Learning Environments

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Abstract
This article examines how digital ethics is conceptualized, practiced, and governed in educational communication within increasingly algorithmic learning environments. The study employed a PICO-based systematic literature review (SLR) combined with preliminary bibliometric mapping to explore the research landscape of digital ethics, education, and communication. The study utilized literature data from the Scopus database covering English-language publications within the search period available in the bibliometric materials, resulting in an initial corpus of 212 articles related to digital ethics and educational communication. Following relevance screening based on research focus, educational context, and availability of substantive information, 10 journal articles were selected as the final studies for in-depth analysis. The review applied bibliometric mapping and thematic synthesis approaches to identify research patterns, major concerns, and knowledge gaps. The thematic synthesis identified four recurring themes: institutional governance and policy communication, digital competence including netiquette and digital citizenship, learning data ethics, and the responsible use of generative AI and chatbots. The bibliometric findings indicate that research on digital ethics in educational communication continues to expand; however, the field remains fragmented, geographically uneven, and requires more empirical studies focusing on educational communication practices. The principal contribution of this article is the development of an integrative framework connecting institutional policy, communicative competence, data governance, and AI responsibility to provide a broader understanding of ethical practices in digital educational communication.

Keywords:
Artificial Intelligence; Digital Ethics; Educational Communication; Learning Data; Netiquette

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INTRODUCTION

Digital transformation has reshaped learning processes, pedagogical communication, assessment, and institutional interaction in education. Activities that were previously conducted primarily face-to-face have moved into platform-based environments such as learning management systems, online forums, social media, learning analytics dashboards, and generative chatbots. This shift means that digital ethics can no longer be understood merely as technical compliance. It is also a communication issue concerning how norms, boundaries, authority, transparency, and accountability are negotiated in digital learning spaces (García-Peñalvo, 2021; Hakimi et al., 2021).

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From the perspective of communication studies, this topic is important because digital educational communication is not only about message delivery. It also concerns power relations among users, platform design, data traces, interaction quality, and the formation of digital literacy. Contemporary social reality is increasingly shaped through mediated processes, while educational technologies are always connected to debates about control, meaning, and responsibility (Couldry & Hepp, 2017; Selwyn, 2016). From the standpoint of information ethics, digital educational environments also shape moral agency and user choices (Floridi, 2013).

The bibliometric material used in this study indicates that research on digital ethics in educational communication has developed as a multidisciplinary field. Keywords such as ethics, human, and education appear as central nodes and are connected with communication, privacy, social media, literacy, health, and interpersonal communication. The visualization of publication growth also suggests an increasing trend, although the field is still dominated by particular countries, especially the United States, and empirical studies specifically focused on educational communication remain limited.

The comparison matrix of the ten selected articles shows that the literature is distributed across several focal points, including institutional governance, teachers' digital competence, netiquette, digital citizenship, learning data ethics, and generative AI. However, relatively few studies connect these dimensions within a comprehensive framework. Therefore, a review article is needed not only to identify themes but also to explain their communicative and policy implications.

This article aims to present a PICO-based systematic literature review of digital ethics in educational communication by using preliminary bibliometric scoping as an overview of the research landscape. The study addresses three questions: (1) how is digital ethics conceptualized in studies of educational communication; (2) what themes, methods, participants, and platforms are most dominant; and (3) what significant findings emerge from the synthesis, and how are they relevant for digital educational communication policy?

METHOD

This study used a systematic literature review combined with preliminary bibliometric scoping. This design was chosen because review and bibliometric approaches emphasize procedural transparency, landscape mapping, and thematic synthesis of primary studies (Donthu et al., 2021). Following Hafiar et al. (2024), the bibliometric stage was used to describe publication growth, research topic trends, country distribution, and highly cited references, while the systematic review stage analyzed the content, methods, platforms, and contributions of selected studies.

In this study, the bibliometric stage was not repeated through a new export of raw database records. Instead, it relied on the available bibliometric materials attached to the research. Therefore, the bibliometric stage served as an initial overview of the research landscape rather than a full replication audit of database searching.

The research questions and study selection criteria were organized using the PICO framework adapted for non-clinical inquiry. This adaptation was made so that the review process remained systematic while fitting the characteristics of communication and education research, where explicit comparison groups are not always available.

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Table 1. PICO formulation used for review questions and study selection criteria.

Component	Operational definition	Inclusion criteria	Exclusion criteria
P (Population/Problem)	Actors, settings, or practices of digital educational communication	Schools, higher education institutions, teachers, students, or educational institutions in digital communication contexts	Digital ethics studies unrelated to education or educational communication
I (Intervention/Interest)	Digital ethics issues	Netiquette, digital citizenship, data ethics, learning analytics, AI ethics, chatbot use, and digital ethics governance	Purely technical studies without an ethical dimension
C (Comparison/Context)	Comparative context or platform	Comparisons among policies, platforms, or digital versus conventional learning where available; otherwise, platform context was recorded	Studies without adequate platform or communication context
O (Outcome)	Expected outcomes	Conceptualizations of digital ethics, dominant platforms, substantive findings, and policy implications	Studies without synthesizable findings

Source: Author's data analysis (2026).

Based on the available bibliometric data, the scoping corpus consisted of 212 English-language articles discussing digital ethics, education, and communication. In the second stage, substantive selection was conducted to identify studies most relevant to digital educational communication. Screening was performed by reviewing titles, abstracts, and topic relevance, followed by full reading of selected candidate articles.

Four main criteria were used in the final selection. First, the article had to discuss digital ethics or closely related concepts such as netiquette, digital citizenship, digital trace data ethics, or ethical AI. Second, the study had to be situated in an educational context or directly related to educational communication. Third, the article had to be published by a reputable publisher. Fourth, the article had to provide sufficient information on objectives, theoretical or conceptual framework, methods, participants, platforms, findings, and limitations. Of fifteen articles reviewed in full, ten were selected as the most relevant to doctoral-level communication studies, particularly in digital communication.

The analysis was conducted in two stages. The first stage involved preliminary bibliometric description by examining visualizations and information on publication development, keyword networks, country distribution, and highly cited articles. This stage referred to performance analysis and science mapping approaches (Donthu et al., 2021) and used VOSviewer as the visualization tool (van Eck & Waltman, 2010). The second stage involved

thematic synthesis of the ten core articles using a comparison matrix covering authors, year, location, issue, theory, method, participants, platform, findings, and limitations. Coding was conducted in a concept-centric manner to group studies into interrelated themes (Zupic & Čater, 2015).

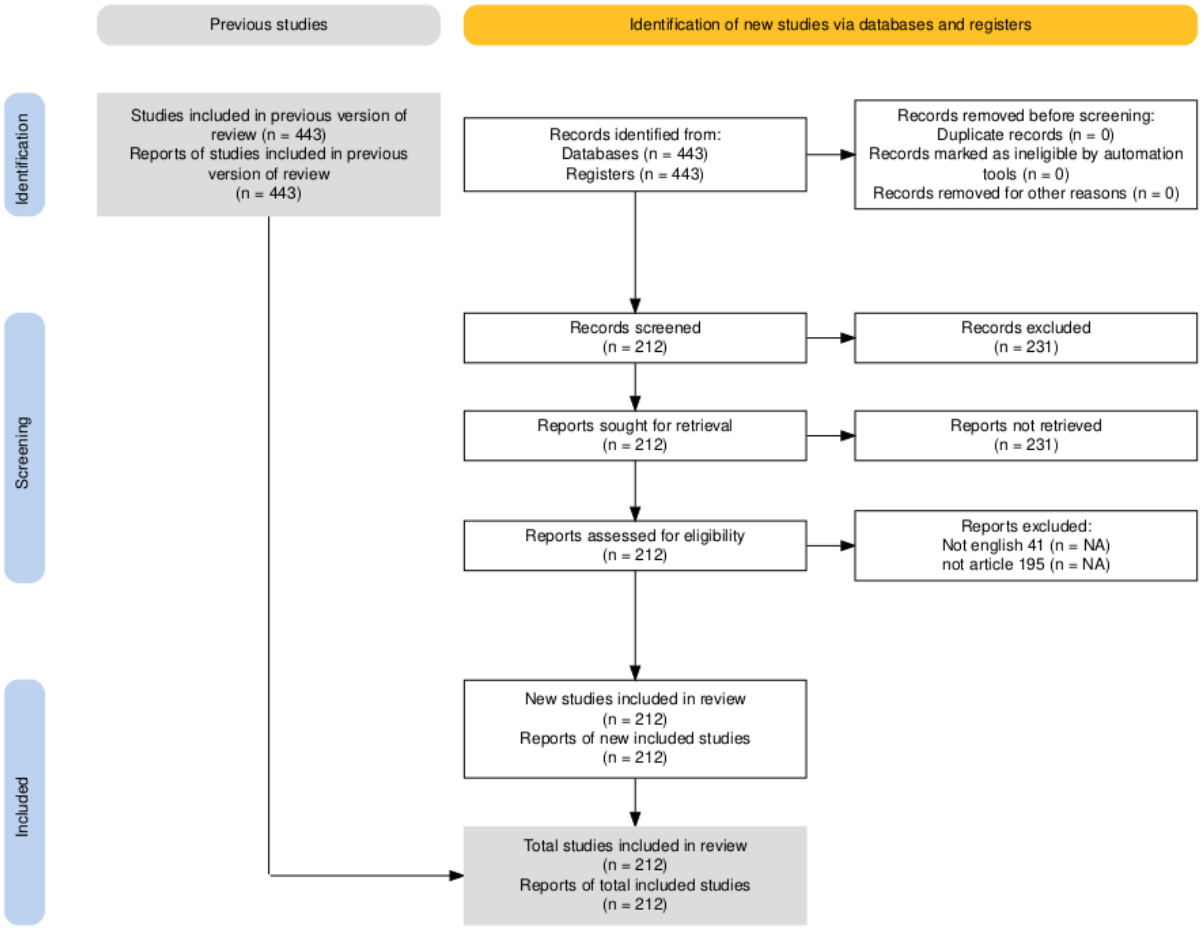


Figure 1. PRISMA flow diagram of the study selection process.
Source: Author's review process (2026).

ANALYSIS AND RESULT

Preliminary bibliometric landscape

The preliminary bibliometric scoping indicates that studies on digital ethics in educational communication continue to grow. The document trend visualization shows an increase in publications over time, suggesting that this topic has become more relevant alongside the digitalization of education. Although the exact annual publication numbers are not presented in the attached material, the growth visualization indicates accelerated research activity in recent years and confirms that digital ethics has become an increasingly important academic concern.

The keyword co-occurrence map generated using VOSviewer shows that this research area has a multidisciplinary character. The keywords ethics, human, and education occupy central positions, while other clusters show connections with communication, privacy, social media, literacy, survey, health, and interpersonal communication. This configuration indicates that digital ethics in educational communication is not limited to one issue but connects technology access, behavior, education, health, and communication.

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From a geographic perspective, the visual country distribution indicates that publication contributions are still dominated by particular countries, with the United States being the most prominent. This finding is consistent with the research gap shown in the bibliometric material: the field is globally visible but geographically uneven. The bibliometric material also shows several influential references. The three most prominent names in the list of highly cited articles or authors are Farnan with 332 citations, Frederix with 254 citations, and Machleid with 143 citations. These references indicate intellectual centers that have shaped debates on digital ethics and digital communication in education.

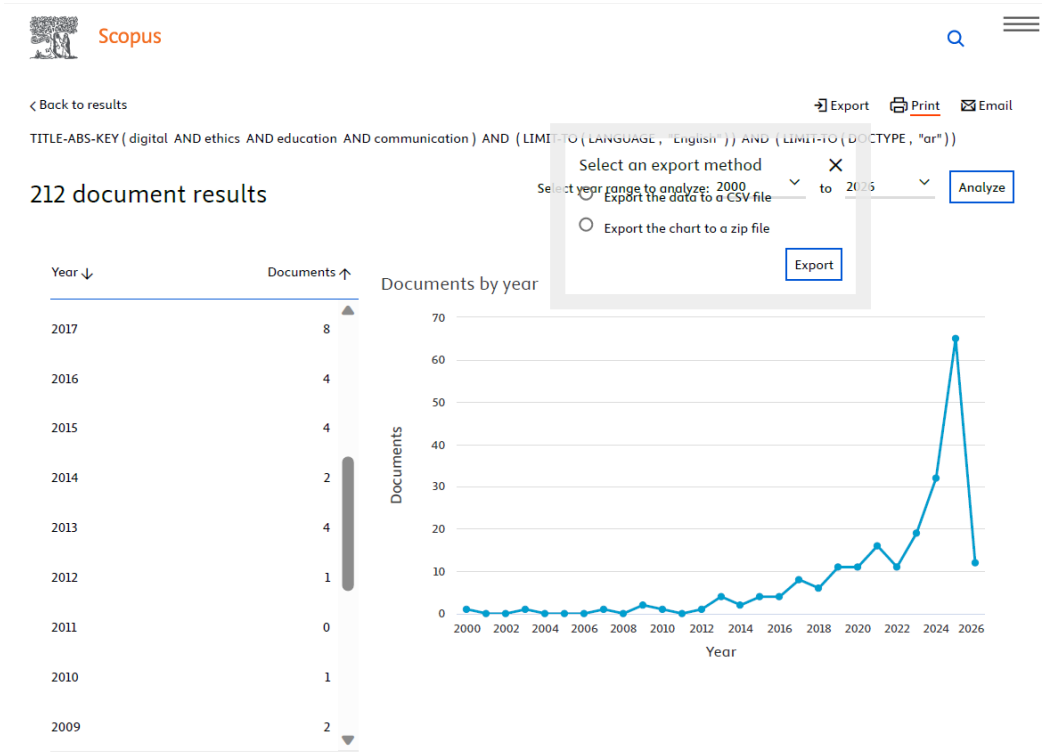


Figure 2. Publication growth trend in digital ethics and educational communication studies.
Source: Author's bibliometric material/data analysis.

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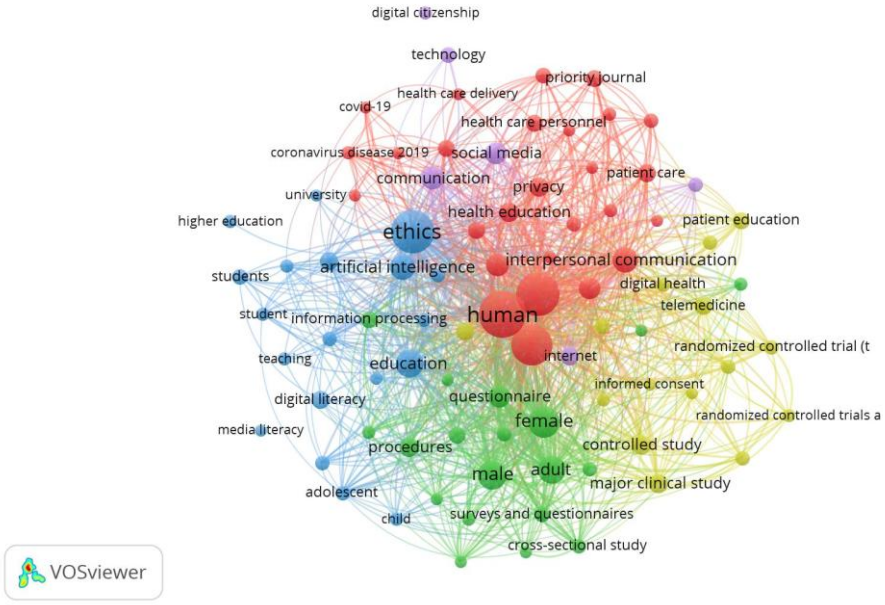


Figure 3. Keyword co-occurrence map of digital ethics and educational communication research based on VOSviewer.
Source: Author's bibliometric material/data analysis.

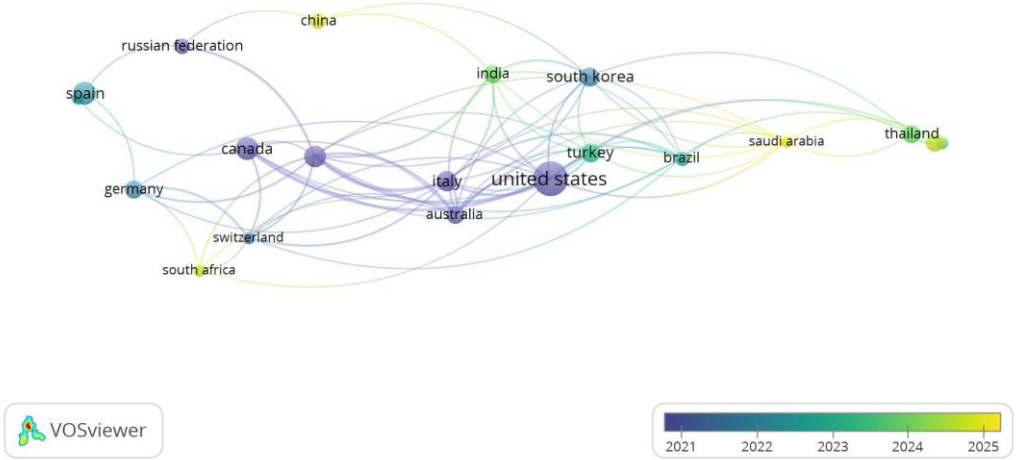


Figure 4. Country distribution in digital ethics and educational communication research.
Source: Author's bibliometric material/data analysis.

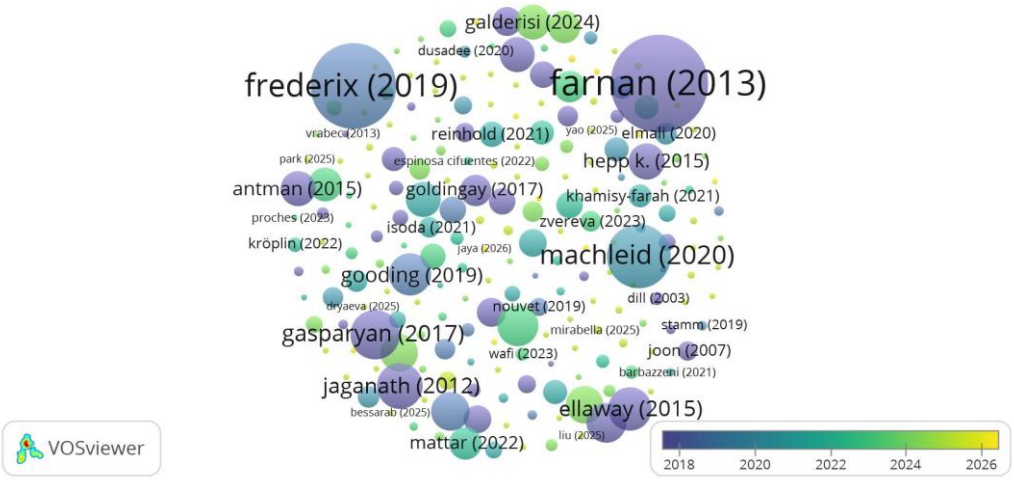


Figure 5. Highly cited references in the preliminary bibliometric material.
Source: Author's bibliometric material/data analysis.

General characteristics of the reviewed studies

The ten core studies analyzed in this article were published between 2021 and 2024 by Springer, Sage, Emerald, Taylor & Francis, Frontiers, Elsevier, and MDPI. Methodologically, the corpus is dominated by literature reviews, conceptual articles, content analysis, and qualitative studies, while survey and quasi-experimental designs remain relatively limited. The most frequent platforms discussed are learning management systems, learning analytics, the internet and social media, and ChatGPT or AI chatbots.

Table 2. General characteristics of the ten core studies reviewed.

Study	Context	Design	Platform	Core finding	Implication
García-Peñalvo (2021)	Higher education, Spain	Conceptual	E-learning, LMS, learning analytics	Ethics must be part of institutional digital transformation architecture	Digital ethics policy should be embedded in learning strategy and services
Tzafilkou et al. (2023)	Primary and secondary schools, Greece	PLS-SEM survey	School digital learning ecosystem	Teachers' digital competence remains uneven and moderate	Digital training should include communicative, pedagogical, and ethical dimensions
Hakimi et al. (2021)	Cross-educational contexts	Thematic review	LMS, MOOCs, forums, social media, analytics	Privacy, consent, validity, governance, and accountability are central issues	Learning data governance must be transparent and accountable
Soler-Costa et	Cross-national	PRISMA-based SLR	Internet, social	Netiquette remains	Online interaction

al. (2021)	review		media, forums, email	conceptually and methodologically weak	norms should be included in curriculum and instrument design
Kaitatzi-Whitlock (2021)	Global orientation	Conceptual-propositional	Digital public sphere	Communication education is important for building digital civil society	Digital ethics should be positioned as communicative citizenship education
Dabis & Csáki (2024)	30 global universities	Content analysis	ChatGPT, policy documents, syllabi	Universities regulate AI through human oversight and academic integrity	Campus AI rules should be clear, explicit, and integrated
Williams (2024)	Higher education	Perspective article	Generative chatbots, especially ChatGPT	AI offers benefits but also privacy, bias, and plagiarism risks	Policy must balance innovation with academic integrity protection
Chauncey & McKenna (2023)	Global orientation	Literature review and exemplars	AI chatbot	AI chatbots can support learning when ethically regulated	AI pedagogy requires responsible-use guidelines
O'Reilly et al. (2024)	Primary schools, United Kingdom	Participatory qualitative study	Children's digital spaces	Ethics of care highlights empathy and responsibility	Digital citizenship policy should be grounded in relationships and user experience
Zheng et al. (2024)	Primary schools, China	Quasi-experiment	Digital game-based learning	DGBL improves digital etiquette literacy, motivation, and engagement	Digital ethics can be taught through interactive learning design

Source: Author's data analysis (2026).

Thematic synthesis of findings

The thematic synthesis identifies four major themes. The first theme is ethical governance and institutional policy. García-Peñalvo (2021) emphasizes that digital ethics must be part of institutional design, not an addition after technology has been implemented. Dabis

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and Csáki (2024) support this view by showing that global universities have begun to formulate generative AI policies through the language of accountability, transparency, and human responsibility. These studies show that digital ethics in higher education is communicated through rules, syllabi, guidelines, and platform design.

The second theme is competence, netiquette, and digital citizenship. Tzafilkou et al. (2023) find that teachers' digital competence is uneven. Soler-Costa et al. (2021) show that netiquette remains theoretically and methodologically weak. Zheng et al. (2024) demonstrate that digital etiquette literacy can be strengthened through digital game-based learning. O'Reilly et al. (2024) show that empathy is an important part of children's digital ethics. Kaitatzi-Whitlock (2021) connects these concerns to the broader horizon of communication education as a way to build a digital civil society.

The third theme is learning data ethics. Hakimi et al. (2021) show that the use of digital trace data raises issues of privacy, informed consent, validity, and accountability. In educational communication, this means that learning platforms cannot be treated as neutral media. The ways data are collected, interpreted, and used shape trust, legitimacy, and power relations in digital learning spaces.

The fourth theme is generative AI and responsible pedagogy. Williams (2024) highlights the risks of data privacy, bias, plagiarism, and reduced learning autonomy. Chauncey and McKenna (2023) show that AI can still support learning when directed by a clear and responsible framework. This theme emphasizes that AI is not only a technical tool but also a new medium that shapes relationships among teachers, students, and institutions.

Table 3. Thematic synthesis of digital ethics in educational communication.

Synthesis theme	Supporting studies	Ethical focus	Implication for educational communication
Institutional governance and policy	García-Peñalvo; Dabis & Csáki	Trust, privacy, oversight, AI rules	Policy guidance and communication must be explicit and integrated
Competence, netiquette, and citizenship	Tzafilkou; Soler-Costa; Kaitatzi-Whitlock; O'Reilly; Zheng	Teacher competence, etiquette, empathy, civility	Digital ethics should be taught through curriculum and everyday communication practice
Learning data ethics	Hakimi	Consent, validity, governance, accountability	Learning analytics requires transparent data governance
Generative AI and responsible pedagogy	Williams; Chauncey & McKenna; Dabis & Csáki	Privacy, bias, academic integrity, disclosure	Chatbots and AI should be regulated through syllabi, assignments, and clear standards of use

Source: Author's data analysis (2026).

Discussion: digital ethics as communicative governance

The findings show that digital ethics in educational communication has shifted from a question of technology adoption to a question of governance, data, and communicative responsibility. In earlier phases, many debates focused on whether institutions were ready to

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implement digital learning. The reviewed corpus suggests that the more important question today is how institutions explain rules, manage data, train users, and preserve interaction integrity within digital ecosystems.

From the perspective of communication studies, the main contribution of this synthesis is the argument that digital ethics is always communicated through particular forms of communication. AI guidelines work through policy language; netiquette works through interaction norms; learning analytics works through data representation; and digital citizenship works through value education. A communication approach therefore adds value beyond a purely technical approach because it explains how platforms operate not only as tools but also as spaces where meaning, compliance, and resistance are produced.

The review also shows that empirical evidence remains limited. Although surveys and quasi-experiments exist, many studies are still reviews, conceptual articles, or document analyses. The field of digital ethics in educational communication therefore requires more field-based studies involving lecturers, students, teachers, school pupils, LMS administrators, and campus policy makers. This need is especially important in Indonesia and Southeast Asia, where cultural norms, infrastructure conditions, and governance practices differ from dominant centers of knowledge production.

For international conference publication, this article can be positioned at the intersection of communication studies, digital education, and governance studies. Its theoretical contribution lies not only in mapping themes but also in offering an integrative framework connecting policy, communicative behavior, data, and AI. Its novelty can be further strengthened by focusing future empirical work on Indonesia or the Global South, particularly on how schools and universities negotiate netiquette, digital literacy, consent, and AI use amid resource inequalities.

CONCLUSION

This article demonstrates that digital ethics in educational communication is understood through four main dimensions: ethical governance and institutional policy, competence with netiquette and digital citizenship, learning data ethics, and responsible use of generative AI and chatbots. The answer to the PICO-based review questions shows that digital ethics is not merely a matter of individual morality. It is a communication configuration involving actors, platforms, data, and policy.

The preliminary bibliometric scoping indicates that publications on this topic are increasing, but the field remains fragmented, geographically uneven, and still lacking empirical studies specifically focused on communication in education. The thematic synthesis shows that policy solutions cannot stop at general regulation. Educational institutions need clearly communicated policies, transparent data governance, digital citizenship curricula, and AI-use guidelines emphasizing human oversight, privacy, disclosure, and academic integrity.

Future research should be directed toward empirical studies of ethical communication practices in digital classrooms, learning analytics in local contexts, user perceptions of AI disclosure, and cross-cultural differences in digital ethics norms. In the Indonesian context, this agenda can provide both theoretical and practical contributions to campus policy development, policy brief preparation, and the design of fairer, more responsible, and more communicative digital learning.

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